



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,844	09/30/2003	John Walker Gilmer	USC7.CON3	4467

6980 7590 09/06/2005

TROUTMAN SANDERS LLP
BANK OF AMERICA PLAZA, SUITE 5200
600 PEACHTREE STREET, NE
ATLANTA, GA 30308-2216

EXAMINER

COSTALES, SHRUTI S

ART UNIT	PAPER NUMBER
----------	--------------

1714

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/674,844

Applicant(s)

GILMER ET AL.

Examiner

Shruti S. Costales

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>9/30/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement submitted on September 30, 2003 was filed in compliance with the provisions of 37 CFR § 1.97. Accordingly, the information disclosure statement filed by the applicant has been considered by the Examiner.

Specification

2. The abstract of the disclosure is objected to because the applicant makes improper use of legal phraseology, such as "comprising". See MPEP § 608.01(b).

Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Applicant is reminded of the proper language and format for an abstract of the disclosure.

Art Unit: 1714

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Objections

3. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

The misnumbered claims have been renumbered as follows:

Misnumbered claim 3 has been renumbered as claim 2 changing the numbering of misnumbered claims 4-13.

Misnumbered claim 15 has been renumbered as claim 13 changing the numbering of misnumbered claims 16-20.

Therefore, the resulting misnumbered claims 1, 3-13, and 15-20 are sequentially numbered as claims 1-18.

Claim dependencies have been changed for the purposes of examination, for example, misnumbered claim 4 depends from a nonexistent claim 2. Therefore, the dependency of misnumbered claim 4 has been changed from claim 2 to claim 1.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. More particularly, claim 1 appears to improperly recite a Markush group. Consequently, it is impossible to determine which elements of the group are required by claim 1. When materials recited in a claim are so related as to constitute a proper Markush group, they may be recited in the conventional manner, or alternatively. For example, if “wherein R is a material selected from the group consisting of A, B, C and D” is a proper limitation, then “wherein R is A, B, C or D” shall also be considered proper [Emphasis added]. See MPEP § 2173.05(h). Claims 2-12 are rejected under 35 U.S.C. 112, second paragraph, as being dependent from a rejected base claim. It is suggested that the applicant insert “the group consisting of” after “from” at lines 2 and 4 of claim 1.

6. Claims 3, 5, 6, 8, and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject

matter which applicant regards as the invention. More particularly, claims 3, 5, 6, 8, and 18 recite "MXD6 nylon", wherein it is not clear to one of ordinary skill in the art what is meant by "MXD6". In order to avoid confusion in the scope of the claims, it is suggested that the applicant amend the claims to include a description of MXD6 instead of only the abbreviation MXD6.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-5, 7-8, and 10-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Lan et al. (U.S. Patent Number 6,232,388).

Lan discloses intercalates and exfoliates prepared by contacting and thereby intercalating, a layered material, e.g., a phyllosilicate, such as a smectite clay with an onium ion spacing/coupling agent and co-intercalation of the layered materials with a melt of MXD6 nylon as polymerizable reactants, or as the nylon oligomer or polymer to form nanocomposite materials with new and unexpected gas (particularly O₂) barrier properties (Col. 1, lines 14-24). The MXD6 nylon can be intercalated in the form of the nylon reactants, metaxylylene diamine and adipic acid polymerizable monomers, or the

Art Unit: 1714

MXD6 nylon can be intercalated by direct compounding (Col. 1, lines 24-30). The intercalate so formed can be dispersed uniformly into MXD6 nylon materials to form MXD6 nylon polymer/clay intercalate nanocomposites by direct compounding of the onium ion-intercalated clay with sufficient nylon intercalated clay, as a concentrate, that can later be mixed with MXD6 nylon and/or other polymeric materials to form a nanocomposite, wherein alternatively a co-intercalate may also be formed (Col. 2, lines 14-25).

Further, according to Lan the MXD6 nylon intercalates can be dispersed in one or more matrix monomers followed by polymerization of the matrix monomer(s), e.g., metaxylylene diamine and adipic acid (Col. 2, lines 26-53). The phyllosilicates such as smectite clays include sodium montmorillonite and calcium montmorillonite (Col. 2, lines 57-65; see also Col. 12, lines 9-17). Lan further defines the MXD6 nylon as being a nylon polymer, or metaxylylene diamine and a dicarboxylic acid, specifically adipic acid, monomer reactants or prepolymer (oligomer) that can react and/or polymerize with curing agents to yield an MXD6 polymer (Col. 4, lines 60-67). The matrix polymers of Lan include one or more melt processible thermoplastic matrix polymers or mixtures thereof such as MXD6 nylon (Col. 14, lines 3-43), polyamides (Col. 14, lines 44-67 and Col. 15, lines 1-6), polyesters, and blends of two or more of the foregoing (Col. 15, lines 7-48). The polyesters include polyethylene terephthalate and the polyamides include nylons (Col. 15, lines 7-67 and Col. 16, lines 1-67). It is to be noted that the melt of the MXD6 nylon corresponds to the platelet oligomeric resin as presently claimed providing

the same function as the polyamide resin within which the platelet particles are first exfoliated and then incorporated into the matrix resin.

It is further disclosed that the layered silicate material is present in the nanocomposite composition in an amount of about 0.05 weight percent to about 40 weight percent and the matrix polymer is present in an amount of about 60 weight percent to about 99.5 weight percent (see claim 1 of Lan). A method of preparing intercalated layered materials and their concentrates that provide unexpected gas impermeability, especially to oxygen, when these intercalated layered materials are incorporated into by direct compounding with matrix polymers, particularly MXD6 nylon (Col. 6, lines 10-17). According to Lan, the reduction in oxygen-permeability is a result of the intercalates and/or exfoliates acting alone, or in combination with the MXD6 matrix polymer as an oxygen scavenger to bind oxygen that it contacts to prevent the transmission of oxygen through the matrix polymer (Col. 5, lines 45-67 and Col. 6, lines 1-9).

In light of the above discussion, it is clear that the presently cited claims are anticipated.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors.. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lan.

The discussion above regarding Lan in paragraph 8 is herein incorporated by reference.

Although Lan does not explicitly disclose that the platelet particle oligomeric resin is poly(ethylene terephthalate) as presently claimed, Lan discloses MXD6 nylon that is used in the intercalation of the clay particles (Col. 1, lines 24-30). Lan also discloses

Art Unit: 1714

that the matrix polymers include one or more melt processible thermoplastic matrix polymers or mixtures thereof such as MXD6 nylon (Col. 14, lines 3-43), polyamides (Col. 14, lines 44-67 and Col. 15, lines 1-6), polyesters, and blends of two or more of the foregoing (Col. 15, lines 7-48). The polyesters include polyethylene terephthalate and the polyamides include nylons (Col. 15, lines 7-67 and Col. 16, lines 1-67).

It would have been obvious to one of ordinary skill in the art to interchangeably use polyesters such as polyethylene terephthalate, useful in the matrix polymer as disclosed by Lan, in the intercalation of the clay particles as well because polyesters can be added before or after exfoliation of the intercalates (Col. 17, lines 1-8), therein intrinsically implying the use of polyesters such as polyethylene terephthalate as a platelet particle oligomeric resin, thereby obtaining the invention as set forth in the presently cited claims.

Conclusion

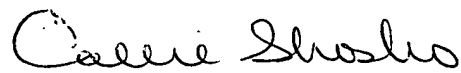
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shruti S. Costales whose telephone number is (571) 272-8389. The examiner can normally be reached on Monday - Friday, 6:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Art Unit: 1714

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).

SSC
Shruti S. Costales
August 30, 2005


CALLIE E. SHOSHO
PRIMARY EXAMINER